

TABLE 1

Telephone Penetration in Households That Own Their Home, Earn Less Than \$5,000 Annually, and Whose Head Is Employed

	States Permitting Disconnection	States Barring Disconnection
White, Non-Hispanic	96.3%	97.6%
Black, Non-Hispanic	90.9%	94.3%
Native American, Non-Hispanic	71.0%	75.0%
Asian, Non-Hispanic	97.6%	98.7%
Hispanic	90.0%	93.5%

TABLE 2

Telephone Penetration in Households That Own Their Homes, Earn Between \$7,500 and \$10,000 Annually, and Whose Head Is Employed

	States Permitting Disconnection	States Barring Disconnection
White, Non-Hispanic	91.4%	84.8% ^{10/}
Black, Non-Hispanic	96.0%	100.0%
Native American, Non-Hispanic	66.7%	100.0%
Asian, Non-Hispanic	76.9%	100.0%
Hispanic	89.9%	100.0%

^{10/} Although subscribership is not uniformly higher in States with a no-disconnect policy, Tables 1-3 indicate that a positive relationship exists between such a policy and subscribership in most instances.

TABLE 3

Telephone Penetration in Households That Own Their Homes, Earn More Than \$75,000 Annually, and Whose Head Is Employed

	States Permitting Disconnection	States Barring Disconnection
White, Non-Hispanic	99.2%	99.2%
Black, Non-Hispanic	98.0%	100.0%
Native American, Non-Hispanic	100.0%	100.0%
Asian, Non-Hispanic	99.4%	98.1% ^{11/}
Hispanic	99.1%	100.0%

Source: November 1994, Current Population Survey, U.S. Census Department

To assess the picture painted by the foregoing tables more closely, NTIA employed a binary logit regression ("logit") on the CPS data.^{12/} The logit enabled us not only to determine whether the relationship between telephone penetration and each of a set of independent variables is positive or negative, but also to estimate its magnitude.

^{11/} See supra note 10.

^{12/} A logit regression is a statistical tool that allows one to estimate the probability that a household with certain characteristics (defined in the regression by a set of independent variables) will make a particular choice (in this instance, to take telephone service). The logit employed is binary because the household may choose between only two alternatives (*i.e.*, to subscribe or not to subscribe). For a detailed discussion of logit models, see R.S. Pindyk and D.L. Rubinfeld, Econometric Models and Economic Forecasts 247-254 (1976).

NTIA's model used three separate types of independent variables: i) price; ii) demographic; and iii) policy. For price variables, we used data developed by Brooks Albery for his paper on telephone penetration -- the average rate per State charged by the Bell Operating Companies (BOCs) for residential dialtone service; the BOCs' average connection charge per State for residential dialtone service; and the combined interstate and intrastate subscriber line charge per State.^{13/} Demographic variables of surveyed households included race/ethnicity, income, level of education, employment, marital status of the head of the household, and whether the dwelling was owned or rented. The policy variables identified whether or not the relevant State had a no-disconnect policy, a Lifeline program, or a Link Up program.

The results of the logit strongly support the notion that a no-disconnect policy will have a significant effect on telephone

^{13/} See Brooks Albery, What Level of Dialtone Penetration Constitutes "Universal Service"?, TELECOM POL'Y, Vol. 19, 1995 (attached to Comments of Sprint). Because Albery used only BOC rates, his data on residential rates and connection charges are subject to criticism that they are not fully representative of LECs as a whole. His approach is nevertheless a reasonable and defensible solution to the difficult problem of developing data on such rates for use in a penetration model. Albery's analysis also included a weighted price index for interstate and intrastate toll service, based on figures contained in the Commission's periodic reports Trends in Telephone Service. That index does not vary from State to State, however. That was not a problem for Albery because his work was a time-series analysis. Because NTIA's analysis rests on cross-sectional data (*i.e.*, data from a single year that varies from State to State), the lack of variation in Albery's toll index in any year means that NTIA could not include it in our model.

subscribership.^{14/} The coefficient associated with the no-disconnect policy (DISCDUM) variable (.115) is both positive and statistically significant at the 95 percent confidence level, which indicates that as the value of DISCDUM increases (e.g., from 0 (a State permits disconnection) to 1 (a State bars disconnection)), the likelihood that a household in that State will have telephone service increases as well. The estimated magnitude of that relationship is given by the odds ratio associated with DISCDUM (1.122). That figure implies that a State's adoption of a no-disconnect policy will increase the odds that a household in that State will have telephone service by a multiplicative factor of 1.122.

The results of the logit can be used to estimate the likelihood that a household or households meeting certain demographic characteristics will have a telephone. Table 4 presents predicted penetration levels for four different types of households. Each household shares several fundamental characteristics: the occupants are married, employed, and live in a State that permits disconnection of local service for nonpayment of long distance charges. For simplicity's sake, we further assume that the State has adopted no Lifeline or Linkup

^{14/} The model's rho-squared, which tests how well the model explains the variation in the independent variables, is .204. Values between .20 and .40 are very satisfactory. See Dan Steinberg and Phillip Colla, LOGIT: A supplementary module by Salford Systems 17 (San Diego, CA, Salford Systems 1994) (citing David Hensher and Lester Johnson, Applied Discrete Choice Modeling (1981)).

programs. The connection charge and monthly bill for residential phone service in that State are assumed to be \$35.00 and \$15.00, respectively. The second column gives the predicted penetration for each type of household, given the underlying assumptions. The third column indicates how that penetration would change if the State were to adopt a no-disconnect policy.

TABLE 4

Characteristics of Household	Predicted Penetration if State Permits Disconnection	Predicted Penetration if State Bars Disconnection
White, Non-Hispanic Annual Income Less Than \$5,000 Rents Home	79.1%	81.0%
Black, Non-Hispanic Annual Income \$10,000-13,000 Rents Home	81.8%	83.5%
Native American Annual Income \$40-50,000 Rents Home	90.8%	91.7%
Hispanic Annual Income Over \$75,000 Owns Home	99.6%	99.7%

Thus, a more exacting analysis of the CPS data confirms the conclusions suggested by Tables 1-3. There is, in fact, a positive and significant relationship between a no-disconnect policy and telephone penetration. Moreover, as the examples demonstrate, that relationship grows weaker as income increases.

More importantly, the potential gains in subscribership attributable to a no-disconnect policy will most likely be concentrated among those households most at risk of being or becoming phoneless. It is those households (which doubtless number in the hundreds of thousands) who today should be the focus of universal service policymaking.^{15/}

^{15/} If, in the future, the Commission determines that a nationwide no-disconnect policy would be in the public interest, NTIA believes that Public Service Commission of Maryland v. FCC, 909 F.2d 1510 (D.C. Cir. 1990), gives the Commission ample authority to preempt the States. We emphasize, however, that preemptive Federal action in this area is permitted because disconnection of local service for nonpayment of interstate long distance charges has two essential characteristics: (1) it impinges on Federal interests by denying a household's ability to receive Federally-regulated communications; and (2) the reasons for local service cutoff lie in the subscriber's actions or inactions with respect to that Federally-regulated service. If, on the other hand, termination of local service is triggered by a subscriber's conduct concerning a service wholly within the State's jurisdiction (such as a failure to pay intrastate toll charges), Federal preemption would not be justified, even though such disconnection would indirectly affect Federal interests. See id. at 1515 n.6.

Bell Atlantic contends that the Maryland decision bars the Commission from adopting a national no-disconnect policy. See Comments of Bell Atlantic at 10-11. That argument, however, rests on a selective quotation of footnote six of the court's opinion. Read in its entirety, that passage makes plain that the court looked askance only at Commission preemption of State disconnect policies motivated exclusively by actions and interests entirely within a State's jurisdiction under the Communications Act. The tenor of the court's opinion, and its ultimate holding, indicate that the court would likely have upheld a Commission decision barring disconnection of local service for nonpayment of Federally-regulated long distance charges.

B. Policymakers Should Explore Increasing Connection Assistance Under the Link Up Program

The Commission notes that current policies discounting installation charges may be inadequate to ensure reconnection to the network for highly mobile individuals. For example, the Federal Link Up program, which is administered in conjunction with the States, allows States to reduce telephone installation charges for qualified households by paying up to half of the first \$60 of connection charges. The Commission notes that time limits placed on the receipt of this subsidy by some States (of once a year, for example) may undermine the benefit of the subsidy for highly mobile individuals.^{16/}

NTIA agrees with the Commission that further study of expanding Link Up to address the needs of low income, highly mobile individuals is appropriate. Such a study should be undertaken in coordination with the States. As noted by one commenter, there may be more low income, highly mobile populations in urban areas than in rural areas.^{17/} Any changes to the Link Up program, therefore, must allow States flexibility to address their own particular subscriber demographic situations. Furthermore, any expansion of the program should

^{16/} Notice at 13012, ¶ 38.

^{17/} See Comments of Montana Independent Telecommunications Systems at 8.

produce benefits that outweigh the costs of such expansion.^{18/}
 To keep costs down it may be appropriate to allow subscribers to receive more frequent assistance with installation charges only if they are also willing to take long-distance blocking options.^{19/}

V. THE COMMISSION AND THE JOINT BOARD SHOULD GIVE PROPER WEIGHT TO THE IMPORTANCE OF ACCESS TO ADVANCED SERVICES

A. Policymakers Should Monitor Access by Under-Represented Groups to Advanced Services as Well as to POTS

Passage of the 1996 Act brings a new dimension to the concept of universal service in this country. As recognized in the 1996 Act, the United States must go beyond our traditional focus on telephone penetration as the sole barometer of the nation's progress towards universal service.^{20/} Clearly, the necessity of a telephone for safety, economic, and social reasons remains strong. Today, however, with the many economic, cultural, and social benefits associated with being connected to

^{18/} In 1994, about 840,000 households received \$18.5 million in Link Up assistance. Notice at 13008, ¶ 23. See also Comments of U.S. West at 9 (recommending a cost-benefit analysis before expanding the Link Up program).

^{19/} See Comments of the National Telephone Cooperative Association at 12.

^{20/} The 1996 Act states, for example, that "Universal service is an evolving level of telecommunications services that the Commission shall establish periodically . . . taking into account advances in telecommunications and information technologies and services." See the 1996 Act, § 101. The 1996 Act also directs the Commission and the States to encourage the deployment of advanced telecommunications capability to all Americans through various methods. See the 1996 Act, § 706.

a vast network of information resources, policymakers also should be monitoring Americans' ability to access advanced services.

In Falling Through the Net, NTIA developed a profile of universal service in America that went beyond telephone service to include computer and modem ownership.^{21/} At NTIA's request, the Census Bureau included a series of questions on computer/modem ownership and use in its CPS for November 1994. The data gathered reflect many of the same geographic and demographic disparities that exist with respect to telephone subscribership. For example, although the national average for personal computer penetration is 25.5 percent of all households, only those households with incomes of \$35,000 or more exceed this average. (See Chart 3, Appendix B.) Viewed by race/origin, all groups in rural areas -- including white non-Hispanics -- except for Asians or Pacific Islanders fail to match or better the U.S. figure. In central city areas, where such penetration is generally much higher, the rates for Black non-Hispanics and Hispanics still fall far short. (See Chart 4, Appendix B.)

The national penetration level for computer households with a modem is 45.5 percent, and again certain segments of the population have not kept up. Strikingly, in rural areas, only those with household incomes greater than \$50,000 generally surpass the nationwide average. In central city households,

^{21/} See Falling Through the Net, supra note 4.

levels are generally much higher, but not until household incomes reach \$35,000 is the national figure exceeded, on average. (See Chart 5, Appendix B.) While some race/origin categories exhibit rather high penetration rates, many do not, and almost no minority groups manage to beat the U.S. rate. (See Chart 6, Appendix B.)

These disparities in the ownership of the equipment needed to exploit the benefits of the information superhighway threaten more than ever the economic, cultural, and educational cohesiveness of the nation. While the Commission has long monitored telephone subscribership numbers on a highly-disaggregated basis, the time has come for this effort to be expanded to include computers and modems. In view of the directives in the 1996 Act, NTIA recommends that the Commission and the States undertake an effort to monitor access to such equipment at both a national and detailed disaggregated level along the lines described in Falling Through the Net. NTIA and the Census Department stand ready to provide any assistance in this effort that will be necessary. Accurate statistics of this type will help Federal and State regulators develop appropriate policies to ensure that all Americans have access to increasingly important information networks.

B. In Implementing the 1996 Act's Universal Service Provisions, the Commission, the States, and the Joint Board Should Consider the Importance of Community Access Centers in Providing Universal Access to Advanced Services

The Census data also indicates that seven in eight households do not have both a computer and a modem and are, therefore, unable to access more advanced information networks, such as the Internet or other on-line services, from home. In light of the importance access to information services is having on the ability of individuals to compete and prosper, NTIA believes that transitional steps should be taken to promote such access. Ideally, all Americans that desire access should have it and individual household connections to the information superhighway should remain a long-term national goal. For the immediate future, however, NTIA believes that "community access centers" (CACs) are a viable, important interim solution. This belief is shared by a number of States, the National Information Infrastructure Advisory Council (NIIAC), and a variety of private sector organizations.^{22/}

^{22/} The NIIAC, which counsels the Administration's Information Infrastructure Task Force, is a thirty-six member advisory panel comprised of representatives of the private sector; State and local governments; and community, public interest, education, and labor groups. The NIIAC has stated that a "short term national goal should be set to deploy NII access and service capabilities to all community-based institutions that serve the public, such as schools and libraries, by the year 2000." See NIIAC, Common Ground: Fundamental Principles for the National Information Infrastructure, March 1995, p.8. Even those who strongly advocate that NII access to all homes is far superior to any other arrangement still acknowledge the usefulness of access to public institutions "as a transitional step towards full in-home access." See, e.g., Comments of Alliance for Public Technology at 1, in NTIA's Inquiry on Universal Service and Open Access

CACs are community institutions where the public can access advanced telecommunications networks or services. Schools and libraries historically have served as CACs for education and community development and have an integral role to play in advancing the universal service goals embodied in the 1996 Act. The 1996 Act has given impetus to the Administration's goal of connecting the nation's schools, libraries, and hospitals by the year 2000 by requiring telecommunications carriers to provide services to such institutions at discounted rates set by the Commission and the States.^{23/} The Commission and the States should move swiftly to implement that critical provision of the 1996 Act, to ensure that these vital institutions are connected to the Information Superhighway.

In addition to their traditional roles, NTIA envisions schools and libraries as the "hub" for wider community networks that will play a fundamental role in furthering universal access to advanced telecommunications and information services. Over the past two years, NTIA's Telecommunications Information and Infrastructure Assistance Program (TIIAP) has provided matching funds to 210 projects throughout the country to promote a vast array of community-based network infrastructure development. Through grass-roots, public-private partnerships, many TIIAP grantees have used schools and libraries as platforms to reach

Issues (submitted Dec. 14, 1994).

^{23/} See the 1996 Act, § 101.

additional sites as diverse as senior citizen clubs, community centers, housing projects, and police depots. At these "outreach posts" on the network, people who otherwise would have no access to advanced services have been able to enjoy their benefits.

In Newark, New Jersey, for example, the local elementary school, concerned about the health needs of its students, created a community network connecting the school, the low-income housing project where its students and their parents live, and the area's major teaching hospital. Through this information network, twenty families who formerly did not know each other and had little experience with computer technology can now communicate on-line with each other, with school personnel, and with doctors at the hospital about pressing educational and health concerns. This small-scale project serves as a model on how to use the school as a resource for a wider network designed to address difficult community problems.

In Charlotte, North Carolina, "Charlotte's Web" links more than 2,000 computers located in libraries, classrooms, and offices in 13 elementary schools, 8 middle schools, 7 high schools, and 4 administrative areas. During 1995, Charlotte's Web conducted Internet workshops for media specialists, teachers, and vocational directors. It designed an on-line school of the future and provided information to the community at unprecedented levels.

NTIA recommends that the Commission and the States, in implementing the universal service provisions of the 1996 Act, recognize that schools and libraries (like those in Newark and Charlotte) can serve their communities in ways that extend well beyond their traditional functions and operating hours. They can serve as backbones of wider community networks, thereby advancing the fundamental goal of expanding affordable access to advanced services. As the Commission anticipates in its Notice of Proposed Rulemaking on universal service, mechanisms to defray the costs of service connections for schools and libraries should be explored fully.^{24/} NTIA recommends, further, that the Commission and the States also acknowledge the potential of those institutions in fostering the development of more extensive community networks.

^{24/} Federal-State Joint Board on Universal Service, Notice of Proposed Rulemaking and Order Establishing Joint Board, CC Docket No. 96-45, FCC 96-93, ¶¶ 107-111 (released Mar. 8, 1996).

VI. CONCLUSION

For the foregoing reasons, NTIA respectfully requests that the Commission adopt the recommendations contained herein.

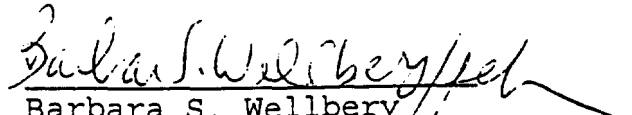
Respectfully submitted,

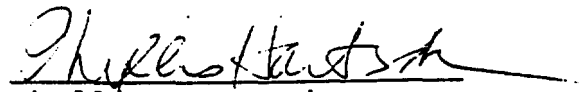
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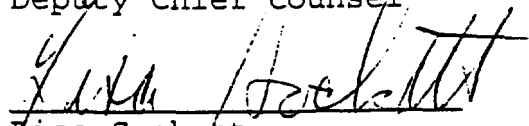
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CERTIFICATE OF SERVICE

I, Cheryl A. Kinsey, do hereby certify that I have this 29th day of March, 1996, mailed by first class United States mail, postage prepaid, copies of the foregoing Reply Comments to the parties of record in this proceeding.

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March 29, 1996

APPENDIX A

**FALLING THROUGH THE NET:
A SURVEY OF THE "HAVE NOTS" IN RURAL AND URBAN AMERICA**



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FALLING THROUGH THE NET: A SURVEY OF THE "HAVE NOTS" IN RURAL AND URBAN AMERICA

I. Background

At the core of U.S. telecommunications policy is the goal of "universal service" -- the idea that all Americans should have access to affordable telephone service. The most commonly used measure of the nation's success in achieving universal service is "telephone penetration" -- the percentage of all U.S. households that have a telephone on-premises.¹ There currently exist two principal sources for nationwide data on telephone penetration: First, the Current Population Survey ("CPS"), conducted by the U.S. Bureau of the Census, U.S. Department of Commerce, three times each year, includes questions on telephone subscription. Second, the Federal Communications Commission's ("FCC") Industry Analysis Division, within the Common Carrier Bureau, uses the CPS data to produce regular reports that provide a detailed demographic profile of telephone subscribership in the United States.

Although these statistics have provided an invaluable empirical foundation for the universal service debate, they are incomplete in at least two respects. The publicly-available CPS data does not include a geographic identifier for the households surveyed, primarily to preserve the confidentiality of household-specific information. As a result, the FCC's periodic reports cannot indicate how telephone subscribership varies geographically -- how, for example, telephone penetration in rural areas compares to penetration in suburbia or central cities.

"While a standard telephone line can be an individual's pathway to the riches of the Information Age, a personal computer and modem are rapidly becoming the keys to the vault."

Additionally, the subscribership data typically collected are limited to telephone service. There are legitimate questions about linking universal service solely to telephone service in a society where individuals' economic and social well-being increasingly depends on their ability to access, accumulate, and assimilate information. While a standard telephone line can be an individual's pathway to the riches of the Information Age, a personal computer and modem are rapidly becoming the keys to the vault. The robust growth recently experienced in Internet usage illustrates this promise as new and individual subscribers gravitate to on-line services.² This suggests a need to go beyond the traditional focus on telephone penetration as the barometer of this nation's progress toward universal service.

As the President's principal adviser on telecommunications policy, the Commerce Department's National Telecommunications and Information Administration ("NTIA") has taken two steps to fill these lacunae in the nation's universal service database. In July 1994, NTIA contracted with the Census Bureau to include questions on computer/modem ownership and usage in the CPS conducted in November 1994³. Further, after the CPS was concluded, NTIA asked Census to cross-tabulate the information gathered according to several specific variables (*i.e.*,

income, race, age, educational attainment, and region) and three geographic categories -- rural, urban, and central city.⁴

"In essence, information "have nots" are disproportionately found in this country's rural areas and its central cities."

By supplementing the existing database in these two critical respects, NTIA has developed a more expansive profile of universal service in America -- a portrait that includes computers and modems as well as telephones. The data in the attached tables provide fresh insights into the make-up of those who are not connected to the National Information Infrastructure ("NII"). More particularly, this research has explored the characteristics of the "have nots" in rural versus urban settings. In addition, the agency has gained new insights about the "information disadvantaged" in America's central cities, enabling policymakers for the first time to array these characteristics against rural and urban profiles. NTIA's examination reveals the usage habits of PC/modem users in accessing on-line services, an important input for policy development in the nascent Information Age.

A Closer Look. In essence, information "have nots" are disproportionately found in this country's rural areas and its central cities. While most recognize that poor people as a group have difficulties in connecting to the NII, less well-known is the fact that the lowest telephone penetration exists in central cities (Table-Chart 1). Concerning personal-computer penetration and the incidence of modems when computers are present in a household, however, no situation compares with the plight of the rural poor (Table-Charts 2 and 3).

An examination by race reveals that Native Americans (including American Indians, Aleuts, and Eskimos) in rural areas proportionately possess the fewest telephones, followed by rural Hispanics and rural Blacks (Table-Chart 4). Black households in central cities and particularly rural areas have the lowest percentages of PCs, with central city Hispanics also ranked low (Table-Chart 5). For those households with computers, Native Americans and Asians/Pacific Islanders registered the lowest position among those possessing modems (Table-Chart 6).

"On the basis of age, the single most seriously disadvantaged group consists of the youngest householders (under 25 years), particularly in rural areas."

On the basis of age, the single most seriously disadvantaged group consists of the youngest house-holders (under 25 years), particularly in rural areas. Overall, they rank lowest in telephone penetration and near the bottom relating to computers on-premises (Table-Chart 7). While senior citizens (55 years and older) -- regardless of the type of area -- surpass all other groups with respect to telephones, rural seniors rate lowest in computer penetration (see Table-Chart 8). Among households with

PCs, the youngest in rural areas also fare worst in modem penetration, followed by rural middle-aged and senior citizens (Table-Chart 9).

"NTIA's research reveals that many of the groups that are most disadvantaged in terms of absolute computer and modem penetration are the most enthusiastic users of on-line services that facilitate economic uplift and empowerment."

Generally, the less that one is educated, the lower the level of telephone, computer, and computer-household modem penetration. For a given level of education, however, central city households generally have the lowest penetration for both telephones and computers (Table-Charts 10 and 11), while rural households with computers consistently trail urban areas and central cities in terms of modem penetration (Table-Chart 12). Northeast central cities rank as the region with proportionately the most telephone and computer "have nots," followed by Southern, central cities and rural areas (Table-Charts 13-14). Modem penetration among computer households is lowest in rural areas, specifically in the West, then the Midwest and the South (Table-Chart 15).

Empowering the Information Disadvantaged. NTIA's research reveals that many of the groups that are most disadvantaged in terms of absolute computer and modem penetration are the most enthusiastic users of on-line services that facilitate economic uplift and empowerment. Low-income, minority, young, and less educated computer households in rural areas and central cities appear to be likely to engage actively in searching classified ads for employment, taking educational classes, and accessing government reports, on-line via modem (Table-Charts 16-30).

The Facts. More specifically, our findings point to the following information "have nots":

- **Poor in Central Cities and Rural Areas** -- Overall, the poorest households (incomes less than \$10,000) in central cities have the lowest telephone penetration (79.8%), followed by rural (81.6%) and urban (81.7%) areas. However, the rural poor are lowest in terms of computer penetration (4.5%) and -- among those households with computers -- modem (23.6%) penetration compared to central cities (7.6% and 43.9%) and urban areas (8.1% and 44.1%). Interestingly, among the most likely users of on-line classes are low-income users (\$10,000-\$14,999) in all areas (rural, central city, and urban).
- **Rural and Central City Minorities** -- Native American households (American Indians, Aleuts, and Eskimos) in rural areas have the lowest telephone penetration (75.5%). Rural Blacks have the lowest computer rates (6.4%), followed by central city Blacks (10.4%), central city Hispanics (10.5%), and urban Blacks (11.8%). Computer households composed of Asian/Pacific Islanders (26.7%) and Native Americans in rural areas have the least modem

penetration. Albeit Whites in urban areas have the highest telephone penetration (96.2%), an urban minority group (Asians or Pacific Islanders) leads all others in terms of computer penetration (39.5%). Regarding usage of on-line services, minority groups surpassed Whites in percentage of: classified ad searches -- urban and central city Native Americans (48.6%, 27.0%) and rural Hispanics (22.1%); taking courses -- rural Native Americans (51.7%) and rural Blacks (33.4%); and accessing government reports -- rural, urban, and central city Native Americans (45.4%, 46.4%, 41.8%) and rural Hispanics (52.8%).

- **Young and Old** -- Regarding telephone penetration, the youngest households (under 25 years) in rural areas trail all others. In terms of computers, rural senior citizens (55 years and older) possess the lowest penetration (11.9%), followed by seniors in central cities (12.0%) and the youngest in rural areas (12.3%). These two groups are also very low-ranking in terms of modem penetration as a percentage of computer households, all in rural areas: the youngest (27.4%), 45-54 years old (38.0%), and seniors (38.4%). Yet the youngest households with computers in rural areas rank number one in taking courses (21.7%) and second in classified ad searches (10.7%). The youngest householders in central city areas are also among the most likely to search classified ads (9.2%) and access government reports (21.0%) among on-line services.
- **Less-educated in Central Cities** -- With some exceptions (most notably, telephone penetration for the two lowest education categories), the fewer the number of years of education, the lower the telephone, computer, and computer-household modem penetration. For a given level of education, however, central city households generally have the lowest telephone and computer penetration rates, while rural households with computers consistently trail other areas with respect to modems. For those taking on-line courses, the highest degree of participation is among those with the lowest level of education (zero to eight years) located in urban (31.8%) and rural (24.3%) areas, and the lowest in the central cities (13.7%).
- **Northeast Central Cities and South** -- The lowest telephone and computer penetration is in Northeast central cities (89.5%, 16.4%), plus central city (91.2%, 22.0%) and rural (91.3%, 18.6%) areas in the South. Modem penetration among households with computers is lowest in rural areas in the West (35.3%), Midwest (37.2%), and South (40.7%). Yet households in the rural South (7.3%) and Northeast central cities (9.4%) are among the most active in searching classified ads, and the latter region in accessing government documents (20.9%). In taking classes, the rural South (22.3%) and central cities (20.3%) topped all other areas, followed by Northeast central cities (18.8%).

Where We Go From Here -- and Why . . . More work needs to be done to better assess the characteristics of these "have nots." For example, it is not clear whether the same low-income disadvantaged are also those who are minorities or the less educated or the young or old. Additional evidence is required for determining whether, e.g., mobility of households is an important determining factor of information exclusion within central cities or rural areas. Once superior profiles of telephone, computer, and on-line users are developed, then carefully targeted support programs can be implemented that will assure with high probability that those who need assistance in connecting to the NII will be able to do so. NTIA anticipates working in a collaborative effort with federal, state, and local policymakers, as appropriate, to meaningfully achieve these goals.

The broad policy implications for these findings should not be overlooked. By identifying those who are truly in need, policymakers can prudently and efficiently target support to these information disadvantaged. Only when this point is reached can all those who desire to access the NII be possibly accommodated. However, connectivity to all such households will not occur instantaneously; rather, there is a pivotal role to be assumed in the new electronic age by the traditional providers of information access for the general public -- the public schools and libraries. These and other "community access centers" can provide, at least during an interim period, a means for electronic access to all those who might not otherwise have such access. Policy prescriptions that include public "safety nets" would complement the long-term strategy of hooking up all those households who want to be connected to the NII.

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II. Methodology and Definitions

The tables and charts that follow draw upon the results of both the Computer Ownership/Usage Supplement and the November 1994 CPS.

Race and Origin. According to the U.S. Census Bureau, race is defined as a concept used by individuals as a self-identification of "biological stock." Such identifiers include White; Black; American Indian, Eskimo, or Aleut; and Asian or Pacific Islander.⁵ In addition to the race identifier, all respondents are asked if they classify themselves as Hispanic in origin, including "ancestry, nationality, group, lineage, or country of birth of the person or the person's parents or ancestors before their arrival in the United States." As a result, individuals of Hispanic origin can be of any race.

Most analyses of telephone penetration use race defined in terms of White, Black, and Other (including American Indian, Eskimo, Aleut, Asian, Pacific Islander,

and other) and Hispanic origin. The consequence of Census' racial description, and analyses based on this description, is a "double counting" for the various races and respondents who claim Hispanic origin. This may result in under representing the penetration figures for those races.⁶ To correct this problem, NTIA requested that Census "recode" the race definitions to exclude Hispanic data, thus creating new classifications. These include a separate category for Hispanic origin, and newly defined categories for White - non-Hispanic; Black - non-Hispanic; American Indian -, Eskimo -, and Aleut - non-Hispanic; Asian -, or, Pacific Islander - non- Hispanic; and other - non-Hispanic. NTIA strongly believes that by recoding the race tabulations, our analysis will present a clearer picture of the "haves" and "have nots."

Rural versus Urban and Central City Areas. The Census Bureau defines "urban" as designated areas comprised of all territory, population, and housing units of 2500 or more persons.⁷ "Rural" areas constitute territory, population and housing units not classified as urban; "places of less than 2500" persons and, what the Census Bureau refers to as, "not in places" (areas not part of or outside of designated Census areas).⁸

Our analysis also includes areas designated as "central city" areas or part(s) of a Metropolitan Statistical Area ("MSA") or Primary Metropolitan Statistical Area ("PMSA") that meet the standard of the "largest place," or places (based on population and other criteria) within that MSA or PMSA.⁹ There is no relation between data for central city and data for urban versus rural.